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ABSTRACT

The study examined the behavior and characteristics of 33 children in a self-contained unit for autistic children in a multidisciplinary framework involving psychiatric, neurologic, psychological, social, and educational parameters. Results of a comprehensive evaluation indicated the following primary diagnoses: early infantile autism, atypical developmental disorder, schizophrenia, autistic behavior with organic central nervous system disease, primary developmental language disorder, and unclassified mental retardation. Case studies of several of the children illustrate the heterogeneity of the population in a special unit for severely disturbed children who are autistic and who have problems in communication. Even within the diagnostic categories the children are individuals and different from one another. Prognostic information and suggestions for intervention are noted. (CL)

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Autistic Children
In a Self-contained Unit
In the Public Schools

by

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With the commitment to the education of all handicapped children self-contained units for education of severely emotionally handicapped children were established in Hillsborough County. One of these self contained units was committed to the education of children who have severe difficulty in affective and in verbal communication. These are the "autistic" children.

It is recognized however that "autistic" children do not comprise a discrete diagnostic group with similar etiology, clinical manifestations, natural history, treatment or prognosis. "Autism" may be a symptom simply designating affective withdrawal or it maybe a syndrome characterized by "lack of social relationships (affective withdrawal) lack of communication abilities, persistent compulsive rituals and resistance to change."(Paluszny, 1979)

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As a symptom, many factors may result in the development of autism. Children with increased or decreased perceptual sensitivity, with organic defects of the central nervous system, with inadequate homeostatic mechanisms, with an overstimulating or understimulating environment; with language delays at all levels of reception, association or expression, all of these may initiate withdrawal from a confusing, disturbing, ungratifying environment. It is as though autism - affective withdrawal - is a final common pathway for many different problems in development, a common behavioral response within the response repertoire capability of the infant and young child.

Even as a syndrome there is no uniformity in etiology, clinical manifestations, treatment and prognosis. Although the term autism was first used by Eugen Bleuler in 1919 to describe the symptoms of affective withdrawal of adult patients with schizophrenia, it was not until 1943 that Leo Kanner described the syndrome of affective withdrawal; the uncommunicative nature, the idiosyncrasies of their language, their compulsive need for sameness and the ritualistic behavior of a group of 11 children who developed these symptoms before the age of 3 years and whom he designated as suffering from "early infantile autism". Kanner's children were all at least potentially average in intelligence. Although Kanner implicated the relationship of the syndrome to cold and distant, over intellectual mothering in the first few years of life, the syndrome has since been found at all socioeconomic levels and with all varieties of mothering. Also the language impairment may well contribute to impaired cognitive functioning, as measured by standardized testing, in the retarded

autistic child. Further, follow-up studies have revealed that a percentage of the children designated as early infantile autism develop seizures in early adolescence or in late latency. This finding has suggested an organic defect of the central nervous system as causative (Rutter, 1978). Just what this organic factor might be is as yet obscure. Further not all these children develop seizure symptoms. It may well be that within the syndrome designated as "early infantile autism", there are a variety of etiologies. There are those who will go on to have structural, physiological or known metabolic organic central nervous system disease. There are others who do not develop such symptoms. In the latter group there may be genetic or physiologic or metabolic disturbance, but such defect has not yet been identified. There is still in this latter group an "X" factor which appears to have a basic effect on the biology of the developing organism.

The relationship of the syndrome of early infantile autism to schizophrenia has been questioned. Lauretta Bender (1943) believed that children with the autistic syndrome for whom no other etiology was detected, and in whom no evidence for structural defect of the central nervous system was found, represented an early stage of childhood schizophrenia. This opinion is based on the similarity in basic physiological disturbances seen in selected children with infantile autism and those with schizophrenia. The pattern of such physiological deviance is seen in homeostatis, states of consciousness, muscle tone, motility and language disturbance. In follow-up studies, the autistic child who does acquire language develops the typical dereistic thought disturbance with

fluid and loose associations and neologisms, the affective lability, the severe and specific anxiety and the ritualistic behavior of the adult schizophrenic.

DSMIII clearly differentiates early infantile autism from schizophrenia. DSMIII criteria for the diagnosis of early infantile autism includes: autistic affect, gross language deviation in which language is not used for communication, in which there is a retention of rote memory with echolalia, delayed echolalia, marked immaturity in syntax and in use of pronouns, and ritualistic behavior with resistance to change. These symptoms must have had their onset before the age of 30 months. For these children who develop pathology after 30 months of age, the term pervasive developmental disturbance is used. Here, just as in the autistic child, there is impairment in social relations with clinging behavior and autism, sudden and unexplained anxiety to the point of panic, inappropriate affect, resistance to change, motor abnormalities involving primitive reflexes as toe walking, tonic-neck and neck-righting reflexes, increased perceptual sensitivity and disturbances in language.

The term schizophrenia is used in DSMIII only when the child's symptoms begin to resemble those of the adult schizophrenic.

With these considerations as a background, 33 children comprising the entire population of the self-contained unit for "autistic" children in Hillsborough County were studied in a multidisciplinary pentaxial framework involving psychiatric, neurologic, psychological, social and educational parameters. The primary diagnosis for these children is seen in Table I.

Table I
Adapt School
Results of Comprehensive Evaluation
Primary Diagnosis

Early Infantile Autism	5
Pervasive Developmental Disorder	0
Atypical Developmental Disorder	2
Schizophrenia	6
Autistic Behavior with Organic CNS Disease	12
Genetic variants	5
High serum Cu++	2
Histidinemia	1
Maternal rubella	1
Unknown	3
Primary Developmental Language Disorder	5
Mental Retardation - Unclassified	<u>3</u>
TOTAL	33

Of the 33 children only 5 were classified as suffering from early infantile autism resembling the Kanner group. Shane is an example of a non-verbal child in this group. He was a handsome, blond, blue eyed child of 6 years 7 months when first seen. He immediately wraps himself physically about the examiner and has to be peeled off. He is attracted to tiny bits of string on the floor. He picks them up in a fine pincer grasp, manneristically holding his left hand to the side of his face, glancing at his hand from the corner of his eyes. If there are no strings on the floor, bits of thread from his own socks or from the examiner's clothing

will do. The strings are shaken in a fine rhythm or placed in his mouth. His muscle tone is decreased; he enjoys antigravity play, occasionally toe walks or spins about the longitudinal axis. His gross motor activity is smooth, fluid and graceful. Aside from the physical contact, he pays little attention to the examiner. He attends to the tuning fork, the sound of the bells, but not to verbal commands. His hearing is said by the audiologist to be within normal limits. His verbal communication is nil, but he does make humming noises to himself and when given puzzles, attempts to have the examiner help by pulling his arm. Otherwise there is a wandering about the periphery of the room, darting to pick up bits of string. There are moments when he can sit quietly, attempting to do a 4 year old puzzle without success. In spite of his fine pincer grasp, the grasp of the pencil is palmar, using his right hand for visual-motor scrawling. He does not attend the Picture Vocabulary Test, wriggling off the chair, not looking at the pictures. Classical neurological examination is within normal limits. There are no ectodermal abnormalities, but his skin readily flares and wheals on slight scratching. Laboratory examination reveals normal amino acid screen, T4 of 3.8 ug/dl (slightly low), EEG and CT scan normal.

Family history revealed Shane to be the oldest of 2 boys, born 1 year after parents' marriage, with birth weight 7 lbs. 11 ozs. The pregnancy was characterized by nausea and vomiting throughout the 9 months. Development in general was slow in motor, language and affective parameters. He is described as having been a quiet child who would stay awake during nights and play, who is disturbed by loud sounds, who does not

"like anything new". His parents say he understands what they may say to him but can only repeat the last syllable of words. There is a history of delayed speech in a maternal aunt.

Neil is a 5 year 3 month old child, suffering from early infantile autism, who can make words. He is a good size boy, a handsome pale child with wide open, glistening eyes, full cheeks and perioral pallor. His calf muscles bulge out of his socks. Initially he makes little affective relationship with the examiner, but with quiet persistence, he soon does relax, cooperating in the examination, playing ball, delighting in physical activity including anti-gravity play. Although his muscle tone is decreased, he is physically unusually very heavy. His interest in a ball is obsessive, and it is only by removing the ball from the room that he will attend. He has difficulty with spatial localization of sounds, glancing in many directions before responding to the sound of a bell. He enjoys observing his movement in a mirror, jumping up and down, flapping his arms in a manneristic way. He does respond to simple commands, obeying simple one part instructions. His voice is ventriloquistic and nasal, speech is echolalic, neologistic and dereistic, going on in fluid associations to telling about a ball no matter what is asked. He still relates to himself in the third person. He replies with stories of the ball, remembering in great detail what he did with the ball, whom he played with, where he went. Speech is not used for communication. Classical neurological examination, except for persistent drooling, is within normal limits. Visual-motor function is no higher than at a 2 year level. He uses his left hand for throwing a ball, his right for writing. There is a

history of anemia at age 2 years, T&A at age 4, an audiometric study adequate for acquisition of speech. The pregnancy was characterized by the mother being hospitalized for "nerves" and having taken Valium during the last trimester. Birth, however, is said to have been normal. At age 3 months he is said to have started whining and did not sleep through the night until age 3 years. Language development was delayed with echolalia, slurring of his words, limited vocabulary.

Neil and Shane represent two phases in the continuum of early infantile autism. Shane, with no communication language, Neil with the capacity for verbal language which, however, slips away from appropriate responsiveness, into a rote perserverative channel of his own.

Of the 33 children approximately one third (#12) have, in addition to varieties of autistic affect, definite evidence of a structural or identified physiologic or metabolic abnormality of the central nervous system. The emergence of seizures is only one manifestation of this. In our group, for example, there were 2 children with high serum Cu^{++} and high serum ceruloplasmin, 1 child with high serum and urinary histadine, 5 with identified chromosome abnormalities, 1 a product of a pregnancy complicated by maternal rubella, and 3 with classical neurological findings and abnormal EEG's but in whom we could not identify a specific etiology.

Faith, for example, had been studied by many clinics before she came to us at age 7 years. She is said to have been developing normally until age 2 1/2-3 years, when she became increasingly irritable and would scream when her legs were touched. She had febrile seizures and her speech regressed. Since that time investigation revealed a consistently elevated

serum Cu++, persistently elevated ceruloplasmin and an abnormal electroencephalogram of the Lennox-Gastaut type. Liver biopsy was normal, and Keyser-Fleisher rings were never observed. On our examination, she is a pretty child with long blonde hair with blue eyes. She is slightly chunky in appearance, her lips placed in a grimace of a smile. She is restless, constantly moving about with a stiff legged gait, the fingers of her left hand repetitively touching the palm of her left in a series of short jerky type movements. There were bursts of eyelid fluttering accompanied by inspiratory sucking sounds and deep sighing respirations. She recognized her mother, came to her when called, clinging to her. To the examiner there was no affective response. Speech was limited to deep pitched inarticulate sounds. Her muscles tone was generally increased with a clasp knife rigidity. She could not perform fine movements like grasping a cube. Although this child is autistic in the sense of affective withdrawal, her neurological and chemical findings make this an entirely different problem from that of Neil and Shane.

A more subtle type of organic problem is seen in Stewart. He was 14 years of age when we first saw him, a short sturdy boy with round flushed face and acne, peering through thick myopic lenses. His glaze is direct and related. He looks normal, and one tends to talk to him as though he is normal until it is apparent that he in no way understands what is said to him and he can only reply in a thick guttural fragmented speech, virtually unintelligible. His hearing is immediately suspect, but the record reveals that audiometric study found hearing levels for speech to be normal. Amino acid screen and T4 were also normal. Stewart thus is suffering from a

global aphasia involving receptive, associative and emissive aspects of speech. On the other hand, he can appreciate gestures, follow visual commands and is able to imitate gestures. His visual motor function is relatively good. On classical neurological examination, his gait is awkward, his feet everted, his head thrust slightly forward. There is an occasional gross myoclonic like movement of the shoulders and thoracic muscles of the right side. Affect and object relations are not autistic. He derives pleasure from his visual-motor successes, is aware of his language defect and attempts to articulate slowly. His behavior however soon becomes perseverative and compulsive. Once a task is started he simply has to complete it. The drive to completion obscures all else. He sits at his desk doing arithmetic tasks, page after page, refusing to be diverted. This behavior extends into all other aspects of his life. The cause of these symptoms is obscure except that during the 4th month of pregnancy his mother had rubella.

The organic component to the deviant behavior in these children adds another dimension to our understanding of them, alters our therapeutic procedures and prognostic hopes.

Equally important, however, are those children in whom a language disturbance appears to be the primary problem and their behavior secondary to that. They do not have the global pandedevelopmental problems of early infantile autism, and in them there is no evidence for specific structural or metabolic abnormalities of the central nervous system. These are children with developmental language disabilities. Effective therapy involves an understanding of their language disorders. The diagnosis

implies a relatively favorable prognosis. All varieties of language disabilities may be found. Eric, for example, was 10 years 4 months of age and attending classes for trainable mentally retarded children when we examined him. He is not the typical mentally retarded child. His behavior is different from that of his classmates. He does not participate with his group. He sits quietly in his chair, a handsome brown skinned child, occasionally grunting or making a high pitched noise, unrelated to the children about him. He does follow simple verbal commands, however, and relates very well to his teacher and to the examiner. He is manneristic, clicking his fingers and licking them. Tears roll down his cheeks if any attempt is made to have him leave his classroom. Classical neurological examination except for auditory-comprehension at about a 3 year level, non-existent emissive speech, and visual motor function at a 5 year old level, was within normal limits. Although taken into the program for "autistic" children, the major therapeutic thrust was in language. He readily grasped sign language and rapidly mastered Bliss symbols. With these devices for communication, his behavior became more normal and he became happy and affable.

Frank, at 6 years 8 months of age, had a visual motor function of at least 7 years. Verbally, however, he has extreme difficulty with reception and expressive language. He is perseverative, and exhibited severe echolalia and echopraxia. Christopher, also 6 years 8 months, presented another facet of language disturbance. He certainly could correctly perceive auditory stimuli. His expressive speech is clear, well articulated, but Chris has difficulty understanding spoken or written

language. He reads at a 4th grade level, but he does not understand what he reads. This thin handsome child relates very well, tries hard to please, to understand what is wanted, but when thoughts are required, he becomes verbigerative and echolalic, has difficulty with pronouns and keeps repeating "oh my."

In all of these children, neurological and laboratory examination was all essentially normal, except that in all there is evidence that hemisphere specialization for language has not yet developed. These children are capable of affective relationships. They respond to specific training. With Eric, so severe was his receptive language skills that an intact modality was used for training, ie: the visual and the praxic ones. He is now ready to make the transition from Bliss symbols to reading. With Chris, an attempt is being made to train the association aspects of language directly.

A primary diagnosis of schizophrenia was made in 6 children. These, together with the 5 children diagnosed as early infantile autism, comprise one-third of the entire group of 33 children. Just where early infantile autism ends and schizophrenia begins is difficult to determine. Most of the 6 schizophrenic children in this group were recognized as deviant and diagnosed as "autistic" before their third year of life. They may represent progression of the clinical picture as the autistic child grows into latency or represent a high functioning variant of the autistic syndrome. As indicated above, some question the label of schizophrenia, largely because this implies a continuum with the adult schizophrenias. The term childhood psychosis is recommended. For the evaluations of the

population sample of this study, the term schizophrenia is retained. The criteria for this diagnosis is based upon the findings of Lauretta Bender and Barbara Fish. There are basic physiological disturbances in these children relating to immaturity of the physiological homeostatic apparatus, motility based on tonic-neck and neck righting reflexes, decreased muscle tone, abnormal perceptual sensitivity and the sleep-wake cycle; and speech disturbance ranging all the way from mute or echolalic speech to capacity for high levels of abstractions and verbal expression, which, however, is characterized by a dereistic quality. These basic physiological immaturities in turn create severe anxiety, plasticity, and ego boundary disturbance. Secondary behavioral and psychological symptoms represent attempts of the organism to deal with its basic psychophysiological immaturity.

At age 1 year of age Jamie had 2 febrile convulsions, but it was at age 2 1/2 - 3 years that his adopted parents complained that he started "living in a world of his own". There were episodes where he would suddenly dart about the house, putting on lights, talking to imaginary friends. He would not talk to his parents, nor respond to them in any way. A diagnosis of childhood psychosis with autistic features was made, and he was put in special schools. He was seen in the Adapt School at age 9 years 6 months. He is a handsome normal-sized boy. Stereotyped behavior includes excessive rocking back and forth in his chair, pacing up and down, bizarre facial grimacing, sniffing. He frequently flapped his hands in front of his eyes and pinches his thighs and forearms. Vocabulary is good. Comprehension is good. His voice, however, has a peculiar melodic

quality. Speech is at times fragmented, associations are loose, with no logical sequence, unrelated to the stimulus. Pronoun reversals, echolalia, and neologisms are noted. He speaks to imaginary people, taking them out of his pocket or talking to crayons. He becomes panicky at the sight of boxes of breakfast cereals. Classical neurological examination was normal, and he could read at a 2nd grade level.

Just as the prognosis for children with developmental language disorder is better than children with the autistic syndrome, so is the prognosis of the child with schizophrenia as defined in this paper, better than that of infantile autism. The schizophrenic child is capable of speech, he has specific problems with anxiety and body image which can be approached psychotherapeutically and he is usually responsive to psychotropic medication.

What is demonstrated in this paper is the heterogenous nature of the population in a special unit for severely disturbed children who are autistic and who have problems in communication.

Only 15% of the group (5 of 33) are classified as early infantile autism, another 15% are diagnosed as schizophrenic. Approximately one-third of the group (12 of 33) have as an underlying cause of their symptoms identified structural, metabolic or physiological defects of the central nervous system. An additional 15% (5 of 33) have specific developmental language disabilities. Three children are severely retarded, cause unknown, and 2 do not clearly fit the autistic or the schizophrenic pattern, but are sufficiently deviant to be classified as "atypical developmental disorder."

Even within each category, however, the children are individuals and different from each other. In the early infantile autism group, for example, they vary from having no communication skills as in Shane, to having verbal ability but not used for communication (Neil). The language disabilities will display all varieties of dysphasias and all levels of function. The "organic" group will vary depending upon the nature and extent of the organic insult, the age at which it occurred, the native intelligence and the support they have received throughout life.

It is clear, therefore, that to understand each child an accurate, complete diagnostic evaluation is needed. This study not only attempts to classify the primary diagnostic grouping but, for each child, determines his level of functioning, his assets and deficits along various parameters (perceptual, linguistic, cognitive, neurological), his needs or desires, his frustrations, regressions or fixations, and the support he receives at home.

The importance of all this is not simply to group children but to develop a basis for management and treatment and to offer clues for their future needs.

The children with developmental language disabilities with their generally favorable prognosis need training directed at their specific developmental defects and utilization of their intact areas in learning. The children with schizophrenia are for the most part responsive to psychotropic medication, relief of anxiety, psychotherapeutic intervention and usually involvement of the family for resolution of the dynamic problems with which they are attempting to cope; the "organic" children may

need medication directed at the organic defect, in addition to specific educational training attempting to stimulate the deficit areas of function. Abnormalities in the electroencephalogram, suggestive or actual seizure patterns require anti-convulsant medication. The impulse driven child may require psychostimulants. The children with early infantile autism require a more complex variety of approaches, psychotropic medication, behavior modification to encourage attention, relatedness, and even language (Lovass, 1977), attempting to encourage language by utilization of perceptual avenues other than the auditory. This, of course, requires an analysis of the praxic and visual areas. To use sign language in a child with no praxic skills for example would be futile. Reduction of distracting stimuli in the classroom, working with parents in management of the children at home, are all part of the treatment plan.

The important issue, however, is that all children in our program for autistic children are not suffering from early infantile autism. This paper has attempted to demonstrate the heterogeneity of this population in a self-contained unit for autistic children in the public schools and has attempted to illustrate the importance of this heterogeneity in management.